

genus over many years, one who understands the southeastern species, is credited with having participated in the collection of 183 cited numbers; another, who has closely watched the group in the field for half a century and who largely accompanied the painstaking Wiegand, with about 225. These are mere trivialities compared with Wiegand's record of more than 750 but impressive when compared with a total score of only 32. If these clear evidences of field-experience and intensive work on and understanding of the genus had been reversed, perhaps the results would be very different.—M. L. F.

THE VARIETIES OF LYCOPODIUM INUNDATUM.—The circum-boreal *Lycopodium inundatum* L., if it had stayed in the cool-temperate areas of Eurasia, would present no troublesome problem. In North America, however, it is one of a series of species and varieties which extend, as a somewhat perplexing group, all the way from Newfoundland to the Tropics. By many authors it has been considered to be confluent with the coarse *L. alopecuroides* L. of the southeastern United States and the West Indies, a species characterized by its low-arching or recurved-procumbent stem rooting at the tip, its leaves linear- or narrowly lance-attenuate and with the similar sporophylls usually bristly-ciliate, the upright densely leafy fertile branches 0.5–1.5 cm. thick, the strobile 1–2.5 cm. thick, the spores with coarsely reticulate base and with the apical half covered with coarse papillae crowded into rows. Thus Hooker in his *British Ferns* (1861) wrote, under *L. inundatum*, pl. 51: "*L. Carolinianum* and *L. alopecuroides*, and not a few others, supposed species, must be added to this list, if we were to make the exotic synonymy complete"; then, to add to the bibliographic confusion, he cited as a synonym "LYCOPODIUM *Bigelovii*. Oakes and Tuckerman in *Sillim. Journ.*". The latter unverified reference Hooker obviously borrowed from Spring, *Mon. Fam. Lycopod.* pt. ii. 33 (1849), who had cited as a synonym of *L. inundatum* L.: "*L. Bigelovii* Oakes et Tuckerm.! prius (ex Tuckerm. in *Sill. Journ. of Nat. Hist.*).". Oakes and Tuckerman made no such binomial! Instead, Tuckerman in *Am. Journ. Sci. and Arts* (conducted by Professor Silliman and Benjamin Silliman, Jr.), xlv. 47 (1843) had under *L. inundatum* two varieties: " β . *Bigelovii*, (mihi): majus, ramis subramosis elongatis, foliis acuminatis sparsim denticulatis s. integris. *L. Carolinianum*, Bigel. *Fl. Bost.* p. 384.— γ . *alopecuroides*, (mihi): . . . *L. alopecuroides* L.",

etc. The significant point is that var. β . *Bigelovii*, based in part on *L. carolinianum* Bigel. Fl. Bost. ed. 2: 384 (1824), not L., Bigelow's plant with "peduncle . . . long, slender", coming from Cape Cod (Sandwich), was based by Tuckerman primarily on a collection from "Plymouth, Oakes and Tuckerman". Spring confused the collectors with the author and wrongly made them the authors of a species they did not describe; Hooker followed suit and in copying Tuckerman's synonymy, neglected to emphasize that he meant *L. carolinianum* sensu Bigelow, not L.

As pointed out by me in RHODORA, xxiii. 100 (1921), the type of *Lycopodium inundatum*, var. *Bigelovii*, the Oakes and Tuckerman plant from Plymouth, is inseparable from *L. adpressum* (Chapm.) Lloyd & Underwood or *L. Chapmani* Underwood, this well illustrated in Britton & Brown, Ill. Fl. ed. 2, i. fig. 104 (1913), their fig. 105, purporting to show *L. alopecuroides*, being made from a specimen of *L. inundatum*, as shown by the short creeping sterile branches, the slender fertile branch, and the ovate-based sparsely toothed sporophyll. In some later writings, as in RHODORA, xxxviii. 382 (1936), I lost the thread and confused two varieties, taking up again *L. inundatum*, var. *adpressum* Chapm. for what had earlier been described as var. *Bigelovii* and treating, incorrectly, as var. *Bigelovii* a coarser variety which had been described from southern New England and New Jersey as *L. inundatum*, var. *robustum* R. J. Eaton in RHODORA, xxxiii. 202 (1931). As I now understand the three varieties of *L. inundatum* they may be defined as follows.

Leading creeping terminal shoot elongating from 1.5–10 (when submerged –15) cm. beyond the last of the 1 or 2 (very rarely 3) fertile branches; fertile branches 0.5–7 (rarely –10) cm. high; strobile 0.8–4 cm. long, 6–10 mm. thick, its ovate- or lanceolate-based bracts with loosely ascending to spreading tips; transcontinental northern plant. . . *L. inundatum* (typical).

Leading creeping terminal shoot elongating from 0.7–4 dm. beyond the last of the mostly 2–10 fertile branches; the latter 0.5–4 dm. high; strobile (1.5–) 2–15 cm. long, its bracts with lanceolate bases; southeastern and eastern coastwise plants.

Fertile branches stiffly erect (flexuous only when drowned), 2–5 mm. thick, densely covered with loosely ascending to spreading leaves mostly 5–8 mm. long; strobiles 7–14 mm. thick at base, including tips of loosely ascending to spreading elongate (5–8 mm.) bracts; sporangia mostly hidden under the bracts. Var. *robustum*.

Fertile branches erect or flexuous, 1.5–3 mm. thick, more openly covered with appressed or ascending leaves 3–5

mm. long; strobile 3–7 mm. thick, with closely appressed or ascending shorter (3–6 mm.) bracts; outlines of sporangia (at least in dry specimens) often evident through the thin bracts. Var. *Bigelovii*.

L. INUNDATUM L. Sp. Pl. 1102 (1753).—Damp peaty or sandy shores, swamps or bogs, Newfoundland to Alaska, south to Nova Scotia, New England, New Jersey, Pennsylvania, mountain-region to western Virginia and West Virginia, northern Ohio, northern Indiana, northern Illinois, Minnesota, Idaho and Oregon; Eurasia.

Var. *ROBUSTUM* R. J. Eaton in RHODORA, xxxiii. 202 (1931).
Var. *Bigelovii* sensu Fernald in RHODORA, xxxviii. 382 (1936), not Tuckerman.—Eastern Massachusetts, south on or near coastal plain to Florida and Louisiana.

Var. *ROBUSTUM*, forma **furcatum** (Fernald), comb. nov. Var. *Bigelovii*, forma *furcatum* Fernald in RHODORA, xlv. 377 (1942).

Var. *BIGELOVII* Tuckerm. in Am. Journ. Sci. xlv. 47 (1843).
L. carolinianum sensu Bigelow, Fl. Bost. ed. 2: 384 (1824), not L. (1753). Var. *adpressum* Chapm. in Bot. Gaz. iii. 20 (1878), altered to Var. *adpressum* Chapm. Fl. So. U. S. ed. 2: 671 (1883).
L. alopecuroides, var. *adpressum* (Chapm.) Chapm., Fl. So. U. S. ed. 3: 638 (1897). *L. adpressum* (Chapm.) Lloyd & Underwood in Bull. Torr. Bot. Cl. xxvii. 153 (1900). *L. Chapmani* Underwood in Maxon in Proc. U. S. Nat. Mus. xxiii. 646 (1901). *L. alopecuroides*, ssp. *adpressum* (Chapm.) Clute, Fern Allies, 118, pl. 5 (1905). *L. alopecuroides*, forma *adpressum* (Chapm.) Clute in Fern. Bull. xvii. 48 (1909).—Florida to eastern Texas, north on or near coastal plain to southeastern New Hampshire and Nova Scotia, where freely passing into typical *L. inundatum*.

Var. *BIGELOVII*, forma **polyclavatum** (McDonald), comb. nov. *L. adpressum*, f. *polyclavatum* McDonald in Fern Bull. ix. 9 (1901). *L. alopecuroides*, var. *adpressum*, f. *polyclavatum* (McDonald) Clute in Fern Bull. xvii. 45 (1909). *L. inundatum*, var. *adpressum*, f. *polyclavatum* (McDonald) Fernald in RHODORA, xlii. 405 (1940).—M. L. FERNALD.

NEW COMBINATION IN CHRYSOBALANUS.—As a preliminary to issuing the next century of the *Plantae Exsiccatae Grayanae* it becomes necessary to make the following new combination:

CHRYSOBALANUS pallidus (Small), comb. nov. *Geobalanus pallidus* Small, Fl. Miami, 81, 200 (1913).—LYMAN B. SMITH, Gray Herbarium.

Volume 48, no. 569, including pages 89–112 and plates 1021–1026, was issued 6 May, 1946.